## REMARKS

### I. PRELIMINARY REMARKS

The specification has been amended. Claims 1, 3, 6, 7, 10, 14-19, 22, 44 and 45 have been amended. No claims have been canceled by the present amendment. Claims 46-48 have been added. Claims 1-4, 6-19, 21-23 and 43-48 remain in the application. Claims 3, 4, 17, 43 and 45 have been withdrawn from consideration. Reexamination and reconsideration of the application, as amended, are respectfully requested.

### II. REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1, 2, 6-13, 19, 21-23 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully submits that the rejection under 35 U.S.C. § 112, second paragraph, has been obviated by the amendments above. Reconsideration thereof is respectfully requested.

With respect to the "inner region" and "outer region" of the "housing," independent claims 1 and 19 have been amended so as to call for "a housing defining a longitudinal axis and an interior." Independent claims 1 and 19 also indicate that "the housing interior [has] an outer portion and an inner portion that is located radially inward of the outer portion." Applicant respectfully submits that this language is in full compliance with 35 U.S.C. § 112, second paragraph.[1]

Claim 19 has also been amended to indicate that the "housing" has "an exhaust port" and that the "inner portion [of the housing interior] is associated with the exhaust port." Applicant respectfully submits that this language is in full compliance with 35 U.S.C. § 112, second paragraph.

[1] "[A] claim term that is not used or defined in the specification is not indefinite if the meaning of the claim term is discernible." MPEP § 2173.02.

Turning to the objections related to the use of the word "perimeter," the word "perimeter" has been removed from claims 1 and 19.

Finally, concerning the means-plus-function element in claim 19, applicant respectfully notes that claim 19 is a generic to each of the disclosed fuel cell arrangement species and that one of skill in the art would readily understand that each of the fuel cell arrangement species includes structure which performs the function recited in the means-plus-function element. Nevertheless, the specification has been amended in order to obviate this issue.

In view of the forgoing, applicant respectfully submits that one of skill in the art who had reviewed the present application would understand what applicant regards as the invention. The rejection under the second paragraph of 35 U.S.C. § 112 should, therefore, be withdrawn.

## III. PRIOR ART REJECTIONS

### A. The Rejections

Claims 1, 2, 6-16, 18 and 44 have been rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,063,517 to Montemayor et al. ("the Montemayor '517 patent"). Claims 19, 22 and 23 have been rejected under 35 U.S.C. §§ 102 or 103 as being anticipated by, or unpatentable over, the Montemayor '517 patent. Claim 21 has been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the Montemayor '517 patent and U.S. Patent Pub. No. 2003/0011721 to Wattelet et al. ("the Wattelet '721 publication").

The rejections under 35 U.S.C. §§ 102 and 103 are respectfully traversed to the extent that they are applicable to the claims as amended above. Reconsideration thereof is respectfully requested.

**B. The Cited References**

The Montemayor '517 patent discloses a fuel cell apparatus including a fuel cell with an anode 14 and hydrogen injection tubes 22 and 24 at the longitudinal edges of the anode. The fuel cell is rolled in the manner illustrated in Figure 2 and placed in the casing 30 illustrated in Figure 3. As is discussed in greater detail below with reference to particular claims, hydrogen is forced into both longitudinal ends of the anode 14 by way of the hydrogen injection tubes 22 and 24 under sufficient pressure to force the hydrogen through the anode. [Note arrows 34.] Oxidant is supplied to the rolled fuel cell by way of the gaps adjacent to the cathode 26. It appears that hydrogen which was not forced into the anode 14 and byproducts exit the apparatus by way of the injection tubes 22 and 24.

The Wattelet publication has been cited for its purported heat exchanger teachings.

**C. Discussion Concerning the Rejection of Claims 1, 2, 6-13 and 44 Under 35 U.S.C. § 102**

Independent claim 1 calls for a combination of elements including, *inter alia*, "at least one spiral shaped fuel cell, including an anode electrode and a cathode electrode, that defines a fuel path ... ***the fuel path [being] in the form of an empty hollow region defined by two radially spaced electrode surfaces***." The respective combinations defined by claims 2, 6-13 and 44 include, *inter alia*, the elements recited in independent claim 1.

The Montemayor '517 patent fails to teach or suggest the claimed combinations. For example, and referring to Figures 1 and 3, there is clearly no fuel path that is in the form of an empty hollow region defined by defined by two radially spaced electrode surfaces.

As the Montemayor '517 patent fails to teach or suggest each and every element of the combination recited in independent claim 1, applicant respectfully submits that claims 1, 2, 6-13 and 44 are patentable thereover and that the rejection under 35 U.S.C. § 102 should be withdrawn.

**D. Discussion Concerning the Rejection of Claims 14-16 and 18 Under 35 U.S.C. § 102**

Independent claim 14 is directed to a combination of elements comprising "a housing including an inlet and an exhaust port located radially inward of the inlet," "an exhaust region connected to the housing exhaust port" and "at least one anode and cathode arrangement having a spiral shape that extends outwardly of and more than once around the perimeter of the exhaust region and ***defines a reactant path*** having ***an outlet end associated with the exhaust region*** and ***an inlet end connected to the housing inlet***." Claim 14 also indicates that "the housing and the anode and cathode arrangement are constructed and arranged relative to one another such that ***the only reactant flow direction is radially inward toward the housing exhaust port that is located radially inward of the housing inlet***." The respective combinations defined by claims 15, 16 and 18 include, *inter alia*, the elements recited in claim 14.

The Montemayor '517 patent fails to teach or suggest the claimed combinations. For example, the Montemayor fuel cell apparatus includes a casing 30 (hereafter "housing" 30), a fuel cell within the housing, and hydrogen injection tubes 22 and 24 that force hydrogen into the inner and outer ends of the fuel cell anode 14. Referring more specifically to Figures 2 and 3, which are reproduced on the following page with reference characters A, B, C and D added to aid the discussion, the hydrogen is supplied to the fuel cell within the housing 30 by way of inlet tubes A and B, and unused hydrogen and/or byproducts exit by way of outlet tubes C and D.[2] At least some of the hydrogen which enters the housing 30 by way of inlet tube A travels ***radially outward*** into the fuel cell. Otherwise, all of that hydrogen would simply pass straight through the housing 30, from inlet tube A to outlet tube D, and be completely wasted. Additionally, at least some of the hydrogen that enters housing 30 by way of inlet tube B, and/or byproduct from the fuel cell

[2] It is not clear whether tubes A/D and B/C are portions of tubes 22 and 24, or are separate tubes that are connected to tubes 22 and 24. In either case, the analysis is the same. Also, the locations of reference numerals 22 and 24 are reversed in Figures 2 and 3.

reaction, travels in a direction parallel to the longitudinal axis of the housing on its way to outlet tube C. Travel in the parallel direction is ***not radially inward*** travel.

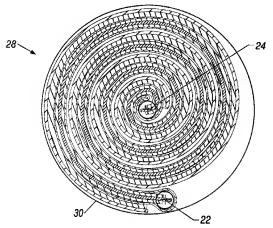


**Figure 2**

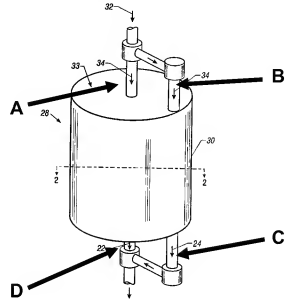


**Figure 3**

As there is clearly reactant flow in directions ***other than radially inward*** (i.e. radially outward as well as parallel to the longitudinal axis), the Montemayor '517 patent fails to teach or suggest each and every element of the combination recited in independent claim 14. Applicant respectfully submits, therefore, that claims 14-16 and 18 are patentable thereover and that the rejection under 35 U.S.C. § 102 should be withdrawn.

## E. Discussion Concerning the Rejection of Claims 19 and 21-23 Under 35 U.S.C. §§ 102 and 103

### 1. The Claimed Combinations

Independent claim 19 is directed to a combination of elements comprising "a housing defining a longitudinal axis and an interior and having an exhaust port, the housing interior having an outer portion and an inner portion that is located radially inwardly of the outer portion and is associated with the exhaust port" and "***means for***

converting reactants into electricity and byproducts and ***directing all of the reactants and byproducts radially inward*** from the outer portion of the housing interior to the inner portion of the housing interior, and at least once around the longitudinal axis, as the reactants are being converted into electricity and byproducts, such that all of the byproducts and any unused reactants that exit the fuel cell assembly exit after passing through the inner portion of the housing interior." The respective combinations defined by claims 21-23 include, *inter alia*, the elements recited in claim 19.

**2. The Rejection Under 35 U.S.C. § 102**

The Manual of Patent Examining Procedure ("MPEP") requires a two-part analysis of means-plus-function elements. ***First***, "the application of a prior art reference to a means or step plus function limitation ***requires*** that the prior art element ***perform the identical function*** specified in the claim." [MPEP § 2182, emphasis added.] Second, "***if a prior art reference teaches identity of function*** to that specified in a claim, ***then*** under Donaldson an examiner carries the initial burden of proof for showing that the prior art structure or step is the same as or equivalent to the structure, material, or acts described in the specification which has been identified as corresponding to the claimed means or step plus function." [Id., emphasis added.] Along these lines, the Federal Circuit stated that "[t]he corresponding structure to a function set forth in a means-plus-function limitation ***must actually perform the recited function, not merely enable the pertinent structure to operate as intended***." *Asyst Technologies Inc. v. Empak Inc.*, 60 USPQ2d 1567, 1672-73 (Fed. Cir. 2001), emphasis added. With respect to the function itself, it is well settled that ***all functional statements*** which follow the "means for" language must be considered. See, e.g., *Sage Products Inc. v. Devon Industries Inc.*, 44 USPQ2d 1103, 1110 (Fed. Cir. 1997).

The Montemayor '517 patent fails to teach or suggest the claimed combinations. For example, the function recited in the means-plus-function element is not being performed because ***not all of the reactants and byproducts are being directed radially inward***. Referring to Figure 3, which is reproduced on page 13 above, there is reactant

and byproduct flow in the Montemayor apparatus that is radially outward. As noted above, at least some of the hydrogen which enters the housing 30 by way of inlet tube A travels ***radially outward*** into the fuel cell. Otherwise, all of that hydrogen would simply pass straight through the housing 30, from inlet tube A to outlet tube D, and be completely wasted. Additionally, at least some of the hydrogen that enters housing 30 by way of inlet tube B, and/or byproduct from the fuel cell reaction, travels in a direction ***parallel to the longitudinal axis*** of the housing on its way to outlet tube C.

As illustrated above, the Montemayor '517 patent fails to teach or suggest each and every element of the combination recited in independent claim 19. Applicant respectfully submits, therefore, that claims 19, 22 and 23 are patentable thereover and that the rejection under 35 U.S.C. § 102 should be withdrawn.

### 3. The Rejections Under 35 U.S.C. § 103

With respect to the alternative rejection of claims 19, 22 and 23 under 35 U.S.C. § 103, the Office Action provided the following basis for the conclusion of obviousness:

> Should Montemayor not be anticipatory, the Examiner notes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the reactant outlet to solely the inner region for the benefit of simplifying the reactant exit flow.

[Office Action at page 10.] In other words, the Examiner appears to have asserted, based on nothing more than her own personal opinion, that it would have been obvious to eliminate outlet tube C shown on page 13 above. Applicant respectfully submits that this statement of Examiner opinion fails to establish a *prima facia* case of obviousness.

With respect to the legal standard upon which patentability under 35 U.S.C. § 103 is determined, the Board of Appeals reiterated in *Ex Parte Catan*, 83 USPQ2d 1569, 1573 (Bd. Pat. App. & Int. 2007), that "rejections on obviousness grounds ***cannot be sustained by mere conclusory statements***; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness," *citing In re Kahn*, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), emphasis added. To that end, "particular findings must be made as to the reason the skilled

artisan, with no knowledge of the claimed invention, would have selected [the] components for combination in the manner claimed." *In re Kotzab*, 55 USPQ2d at 1317. "This factual question of motivation is material to patentability, and ***[may] not be resolved on subjective belief and unknown authority***." *In re Lee*, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002), *emphasis added*.

The present rejection is based solely upon a conclusory statement, subjective belief and unknown authority. As such, it is improper as a matter of law and should be withdrawn.

It is also noteworthy that, in the Examiner's opinion, eliminating the outlet tube associated with arrow 24 in Figure 3 (which is arrow 22 in Figure 2) would have "[simplified] the reactant exit flow." Referring to Figure 2, applicant respectfully submits that this statement ignores the fact that fuel is entering the Montemayor fuel cell from inward and outward ends (i.e. tubes 22 and 24) at what appears to be equal pressure.

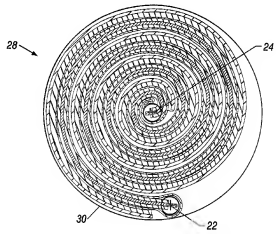


**Figure 2**

Applicant previously requested that the Examiner explain, based on her knowledge of the art, how the Montemayor device would function if ***all*** of the byproducts and any unused fuel had to exit the housing 30 by way of the inward end of the fuel cell (i.e. the end associated with tube 24 in Figure 2) while fuel was being ***simultaneously supplied to the inward and outward ends*** of the fuel cell (i.e. to tube 22 and to tube 24). The Examiner has, however, failed to provide any explanation to date. ***In order to clarify the issues for appeal, applicant hereby requests that any subsequent Office Action include such an explanation.***

In view of the forgoing, applicant respectfully submits that the Montemayor '517 patent fails to render the invention defined by independent claim 19 obvious and that the alternative rejection of claims 19, 22 and 23 under 35 U.S.C. § 103 should be withdrawn.

Turning to claim 21, the Wattelet '721 publication fails to remedy the above-identified deficiencies in the Montemayor '517 patent. Claim 21 is, therefore, patentable for at least the same reasons as independent claim 19 and the rejection of claim 21 under 35 U.S.C. § 103 should also be withdrawn.

## IV. NEWLY PRESENTED CLAIMS 46-48

Newly presented claims 46-48 respectively depend from independent claims 1, 14 and 19 and are patentable for at least the same reasons as claims 1, 14 and 19.

## V. CLOSING REMARKS

In view of the foregoing, it is respectfully submitted that the claims in the application are in condition for allowance. Reexamination and reconsideration of the application, as amended, are respectfully requested. Allowance of the claims at an early date is courteously solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call applicant's undersigned representative at (310) 563-1458 to discuss the steps necessary for placing the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2025. Should such fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

Respectfully submitted,

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Date

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